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I also certify that the attached copy of the request for grant of a Patent (Form 1/77) bears an amendment, effected by this office, following a request by the applicant and agreed to by the Comptroller-General.

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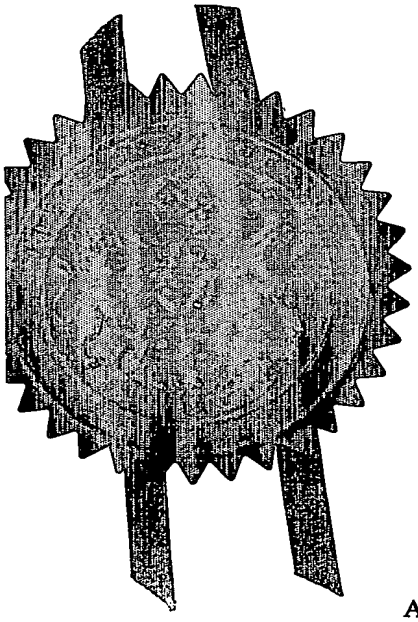

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Patents Form 1/77

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P01/7700 0.00-0217231.0

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
Newport
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NP10 8QQ

1. Your reference

9248

2. Patent application number
(The Patent Office will fill in this part)

0217231.0

25 JUL 2002

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

~~8293367001~~

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01612502400

Patents ADP number *(if you know it)*

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

METHOD FOR PRINTING CUE SPORTS CLOTH AND CLOTH

5. Name of your agent *(if you have one)*

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Patents ADP number *(if you know it)*

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day / month / year)*
N/A	

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
See note (d))

YES

Patents Form 1/77

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Continuation sheets of this form	
Description	5
Claim *(s)*	2
Abstract	0
Drawing *(s)*	3 only

10. If you are also filing any of the following, state how many against each item.

Priority documents	none
Translations of priority documents	none
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	none
Request for preliminary examination and search *(Patents Form 9/77)*	one
Request for substantive examination *(Patents Form 10/77)*	one
Any other documents *(please specify)*	FEE SHEET

11. I/We request the grant of a patent on the basis of this application.

Signature S.R. Bristow Date 24-7-02

12. Name and daytime telephone number of person to contact in the United Kingdom

Stephen Bristow
01942 612959

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METHOD FOR PRINTING CUE SPORTS CLOTH AND CLOTH

This invention relates to a method for printing cue sports cloth to be fitted to pool and other cue sports tables and to the printed cloth produced according to the method and the table fitted with the cloth.

Conventionally cue sports cloth is dyed. The colour used depends on the game being played and the local preferences. Cloths may be woven, felted or worsted, or non-woven and are fabricated from a range of fibres including wool, nylon and mixtures thereof. The best playing surface is widely considered to be obtained by use of a woven, felted woollen cloth. The next best surface is considered to be a worsted fabric made from a wool/nylon blend, usually with up to 30% nylon.

Similar woollen cloths have for some time been used as gaming table covers in Casinos. For those purposes it is common practice to discharge print the already dyed cloth to give a games layout to its surface, for example playing cards may be printed onto the cloth. This printing is done by discharge silk screen printing as described in GB 2311079. It is a costly and time consuming process as each colour must be printed separately and a different screen is needed for each colour.

It has also been proposed in US 5 568 666 to roller print a single colour onto the surface of undyed nylon cloth for pool tables.

Various digitally controlled printing techniques have been adapted for printing on fabric. For example, ink-jet printers have been used for low-speed fabric printing for some years. Color laser electrophotographic printers have been used for fabric printing via a paper based transfer system.

In US 5801739 a high-speed digital printing equipment is disclosed. The advantages of such direct printing equipment are said to be:

1) The time and cost savings of eliminating a plate-making stage

2) The ability to print small runs of a particular pattern cost effectively

3) Near-perfect color registration, as all of the required colors can be printed in a single pass

4) The ability to print non-repeating images of any length

5) The potential compact size of direct digital fabric printers

6) High image resolution

This type of printer and other types are suitable for use in the present invention.

Recently equipment has become available which may be used for the digital printing of silk fabrics. The dyes used in these printers are also suitable for printing onto wool.

We have found that a problem with surface printed woollen cloth is that, when it is used for a cue sports table cover, it can become unsightly rather quickly due to damage caused by a cue tip contacting the cloth. This damage occurs on all cue sports tables but it becomes particularly apparent when the fabric has been surface printed. The problem of cue stabs also occurs with worsted wool nylon blended cloths, but to a much lesser extent than for 100% woollen felted and napped cloths.

Pool cloths are damaged over time by chalk, spillage, marks and cue stabs that dig into the cloth and remove sections of the face of the surface revealing the weave beneath. These are varying in size from 1mm and less to up to 6mm but tend to be consistent depth. Any deeper and they create a hole in the cloth which might result in the cloth being changed. Most cue stabs are endured up until they reach a certain number (or the holes are too numerous) and/or the cloth looks bad in appearance. The wear of the table is characterised by the game itself and the frequency of shots in certain directions and at certain points of the table. For example, there is always a hard hit at the break, which often results in a cue stab in that area.

In our copending GB 0128114.6 we proposed to solve the problem of highly visible cue stabs by dying the bulk fabric a suitable colour before overprinting the design to be applied using the digital printer. This technique is not universally suitable, particularly where the colours of the overprinting must faithfully reproduce a specification. For example in the printing of advertising posters onto the cloth.

This invention solves the problem of reducing the visual impact of cue stab damage without the need to dye the cloth before printing onto it.

According to the present invention there is a design method for designs to be printed onto pool cloth characterised in that the designs so created can maintain their appearance without being visually affected by cue stab damage caused in the normal course of play the design method comprising creating an image to be printed, which, when printed onto cloth and fitted to a pool table has no solid colour in areas of the table liable to high levels of cue stab damage. In particular there are no solid colours in areas of the cloth that will be fitted to parts of the table that suffer from high levels of cue stab damage. One such area is around the D on a pool table. A design rule that we have evolved to achieve a useful degree of cue stab concealment in these high level of damage areas is to not allow any areas of plain coloured and untextured cloth to be present that are larger than a size which has approximately a 50% chance of a cue stab appearing in it over the lifetime of the cloth. The size of this area will vary between types of cue sports games and even from table to table depending on the extent and type o use expected. The heavier the use the smaller the individual areas of plain cloth that should be avoided, so we have a rule of thumb which says that such areas should not exceed a maximum of 150mm diameter. By

this is meant that this measurement is not exceeded several directions. For the avoidance of doubt e intend to cover the situation where two areas are joined together by a narrow pathway of plain cloth to form a larger area which only has the possibility to measure the diameter as being greater than the required limit in one or a limited number of specific directions, for example a dumb-bell shape. Preferably any plain area should be less than 50mm diameter and more preferably 10mm diameter. Most preferably substantially no plain areas more than 5mm diameter are positioned in areas of high risk of cue stab damage.

Advantageously the focal points of the design should lie in areas of very light cue stab damage for instance the cloth that will lie near to the pockets or on the side cushions. By focal point is meant those areas that the eye is naturally drawn towards, for example the face of a person or the whole object in the case of small motif arrangements.

Desirably, when printing a design onto a pool cloth, areas of most damage are determined by mapping and the image to be printed is selected, positioned or manipulated in a design process which is predicted to reduce to a minimum the visibility of cue stabs during use of the design on the playing surface. The manipulation can take two forms. Firstly the design can be positioned so that areas of less intense pattern are sited in areas of high damage probability and areas of maximum message content or focal points are sited in areas of low damage probability. Secondly the image to be printed can be created or modified by not using block colours and by filling backgrounds and other areas with broken patterns that maintain the integrity of the colour but are broken to a degree that will detract from any areas of light colour caused by cue stabs that reach below the level of any print penetration. Hence mosaic, swirls, clouds and bubbles or droplets that may appear in the actual design can be incorporated to effectively hide or mask the white/pale areas that would be revealed by the cue stab. The use of background breakups together with highlights in the patterning is a distinct advantage in solving the problem of cue stab visibility.

Particular design rules that we have found give benefits are that when using the same colour in any given area, at least two shades should be used, one lighter than the other. Cue stabs can be perceived as a lighter shade and the use of light and dark shades in close proximity masks the visibility of the cue stab. The design rule can be expressed as being that the second shade should occur within a 10mm radius of the first shade and preferably within a 5mm radius.

We have also determined that there should advantageously be at least two further colours within a 10mm radius of any one spot of colour, again it would be preferred for these two colours to occur within a 5mm radius of the spot of colour. The smaller the pattern and the more areas of highlighting or high contrast or shade variation, at least in areas of high damage susceptibility, the better. Ideally the pattern and the shading combination should produce a design and shade contrast that creates sufficient visual "noise" that if a cue stab causes a lighter element to subsequently be created it is not easily discernable as damage because it blends in with the pattern and shading already present. Colour can also be used to assist in this effect but it is less important than pattern and shading.

Use of a design that has a broken background, pattern or shading that creates visual noise and in particular using such a broken background as a background for particular brands/pictures or images is not obvious. It is far easier and simpler to use solid colour backgrounds. There are fewer issues with resolution, intricacy of the design etc by use of solid colour backgrounds as well as the inherent advantages of less design/image/pattern manipulation. By taking a design and breaking it up into a pattern/tones/colours as described above the main benefit and objective would be to deal with the cloth design getting damaged and tatty due to cue stabs.

The invention will now be further described, by way of example only, and with reference to the drawings, which are briefly described as:

Figure 1 is a schematic representation of a pool table cloth showing potential areas of high, low and medium cue stab damage;

Figure 2 shows a cloth designed and printed according to the invention;

Figure 3 is an enlarged area of one of the areas of detail showing the mosaic background;

Figure 4 is an enlarged view of part of the background; and

Figure 5 is an enlarged view of part of the highlight.

In figure 1 the D is in the lower part of the rectangle. The squares are approximately 100mm each and represent numbers of cue stabs that might be expected to occur in that square after a period of six months or more. High means that more than 3 cue stabs will occur. Low means 0 or 1 cue stab is likely to occur. It can be seen that the areas of high probability are around the D, around the break position and in the centres of the side cushions. Distinct areas of low damage probability occur in the centre of the table and also in areas between the centre of the table and the corner pockets and the centre pockets.

Figure 2 shows a table 20 with pockets 21 and covered with a cloth printed according to the invention. The cloth has a background mosaic pattern 22. Adjacent each pocket 21 the cloth has been printed with a repeated object 23. Whilst in this instance the background pattern is a mosaic pattern, it could equally be a bubble pattern or any other pattern which fulfills the requirements of masking the cue stab damage, at least in the areas of high levels of predicted damage.

A masking effect has been found to be created in a visually interesting way by use of a background that compliments the base colour of the pool cloth. For example use of a grass type texture for a green cloth, clouds for a blue cloth etc.

Figure 3 shows an enlarged view of a fragment 30 of the cloth design of figure 2. The detail 31 and the mosaic background 32 can be seen. A mosaic pattern is useful in achieving the objects of the

invention because it provides pattern, shade and colour variation to create a visually busy background design. This background design is then suitable to be applied to areas of the table cloth which are liable to suffer from high levels of cue stab damage as seen in figure1 or similarly mapped for a different table or sport. Enlarged views of a part of the background pattern and also a part of the highlight object are shown in figures 4 and 5.

Figure 4 shows a circle 40 of radius R around a spot 41. There are many shades and colours within the circle, which in this case is 10mm in radius. Figure 5 shows a similar circle 50 of radius R around a spot 51. This time there is only one colour, but the shades vary considerably within the 10mm radius.

Claims

1. A cue sports table cloth cover printing method comprising designing the pattern to be applied such that there are substantially no areas of plain colour more than 150mm diameter in substantially all locations on the table which sustain high levels of cue stab damage as hereinbefore defined.

2. A method according to claim 1 in which there are no areas of plain colour more than 50mm diameter in substantially all locations on the table which sustain high levels of cue stab damage as hereinbefore defined.

3. A method according to claim 2 in which there are no areas of plain colour more than 10mm diameter in substantially all locations on the table which sustain high levels of cue stab damage as hereinbefore defined.

4. A method according to claim 3 in which there are no areas of plain colour more than 5mm diameter in substantially all locations on the table which sustain high levels of cue stab damage as hereinbefore defined.

5. A method according to any preceding claim in which at least two further colours are found within a 10mm radius of substantially any spot of a colour in substantially all areas of the cloth in locations that suffer from cue stab damage to a medium or high extent as hereinbefore defined.

6. A method according to claim 5 in which at least two further colours are found within a 5mm radius of substantially any spot of a colour in substantially all areas of the cloth in locations that suffer from cue stab damage to a medium or high extent as hereinbefore defined.

7. A method according to claim 1 or claim 5 wherein at least one further shade of a colour is found within a 10mm radius of substantially any spot of colour in substantially all areas of the cloth in locations that suffer from cue stab damage to a low extent as hereinbefore defined.

8. A method according to claim 7 wherein at least one further shade of a colour is found within a 10mm radius of substantially any spot of colour in substantially all areas of the cloth in locations that suffer from cue stab damage to a low extent as hereinbefore defined.

9. A method according to claim 1 wherein the cloth is wool or a wool blend.

10. A method according to claim 9 wherein the cloth is 100% wool.

11. A method according to any preceding claim wherein the cue sport is pool.

12. A pool cloth printed by the method according to any preceding claim.

13. A pool table covered with a pool cloth according to claim 12.

Figure 1

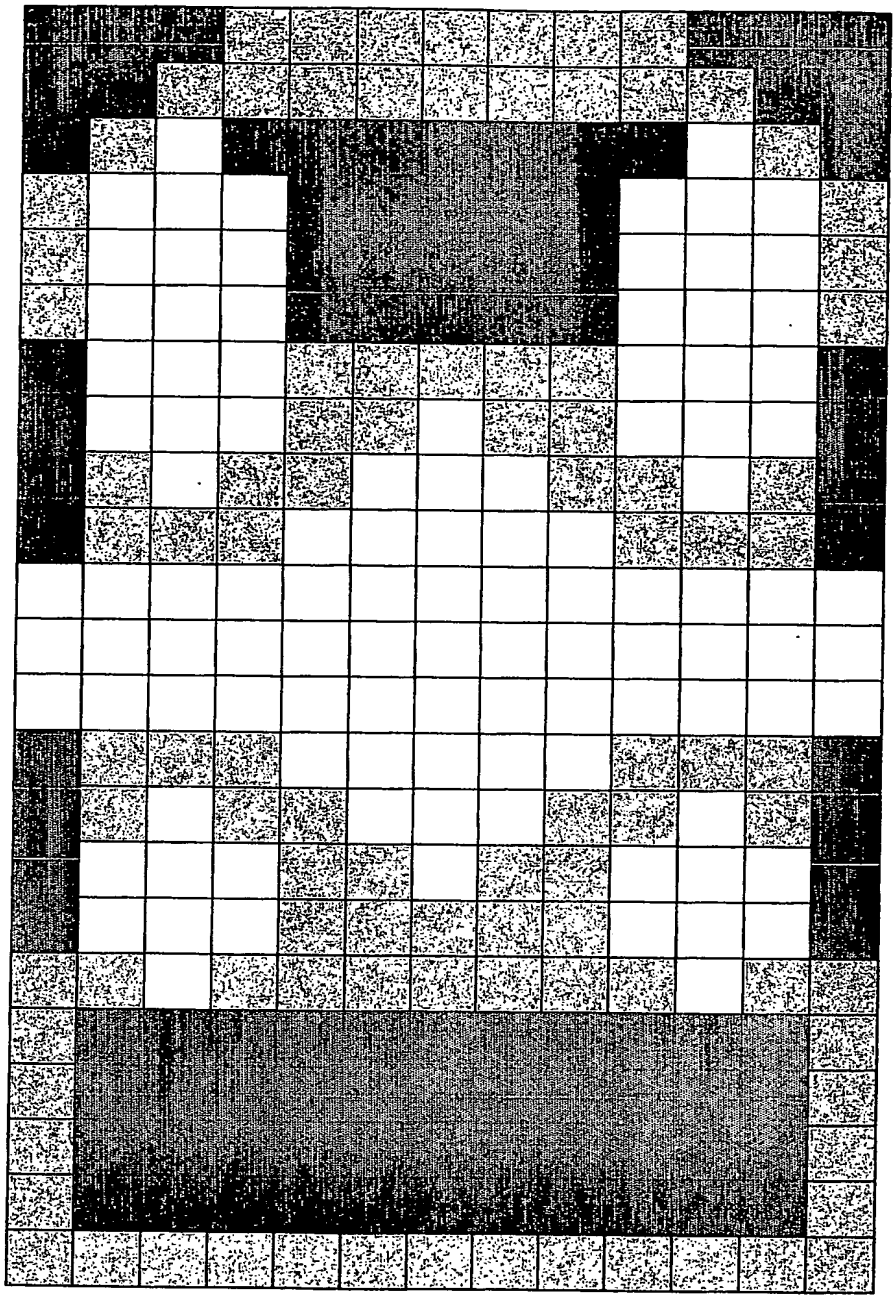

Figure 2

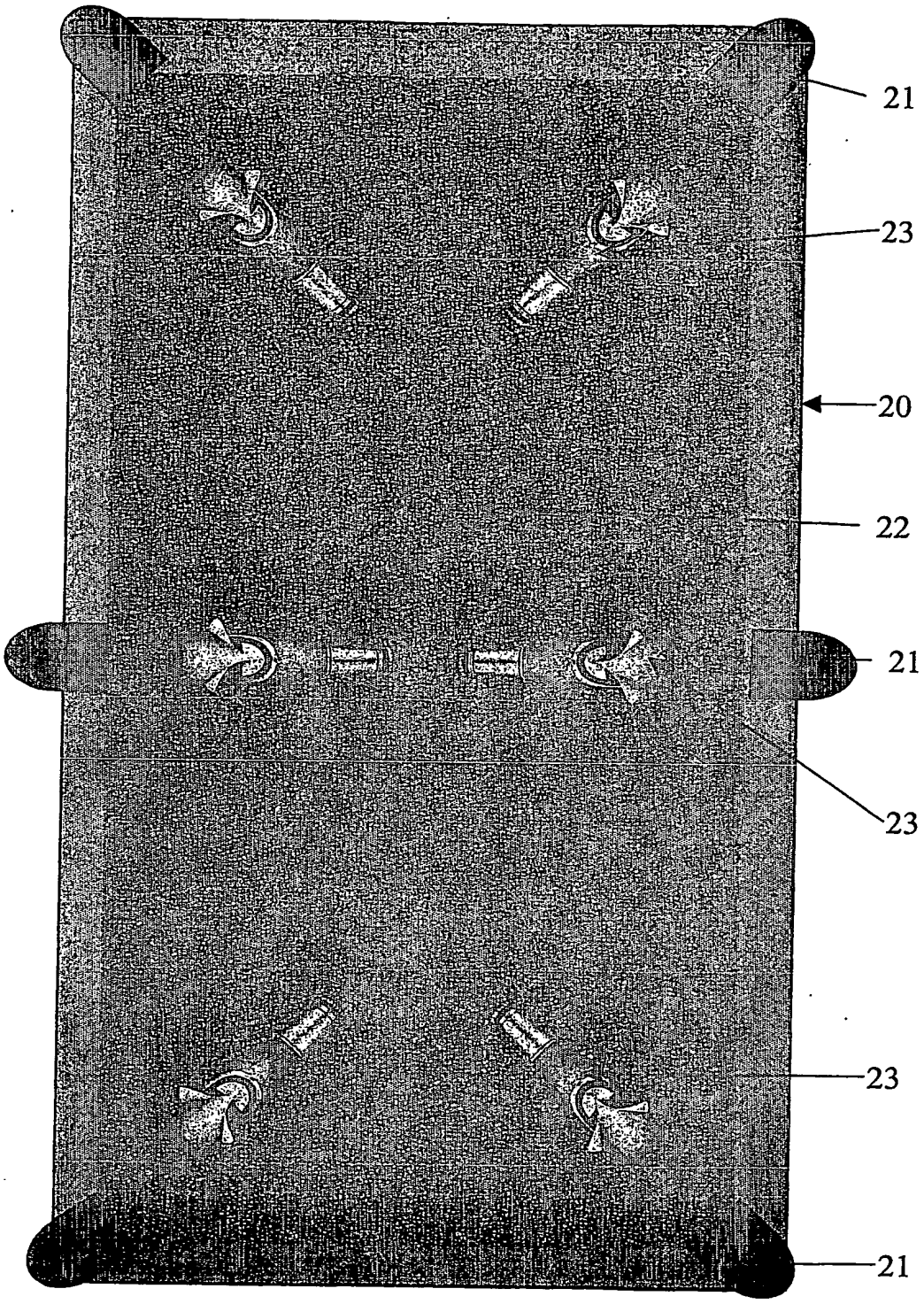

Figure 3

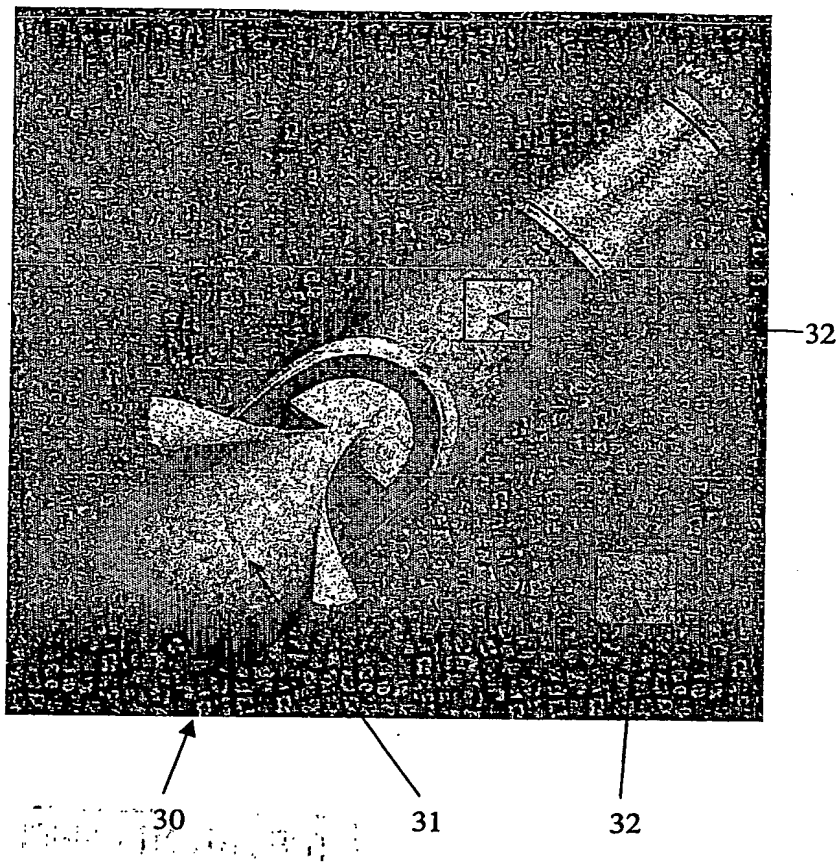

Figure 4

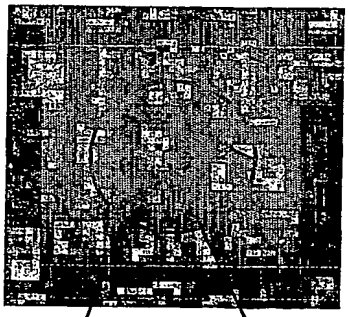

Figure 5